ONTARIO MINISTRY OF ENVIRONMENT
3693600023310

OPERATING SUMMARY

1972

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CARLETON PLACE

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CARLETON PLACE

WATER POLLUTION CONTROL PLANT

MINISTRY OF THE ENVIRONMENT

1972 ANNUAL OPERATING SUMMARY

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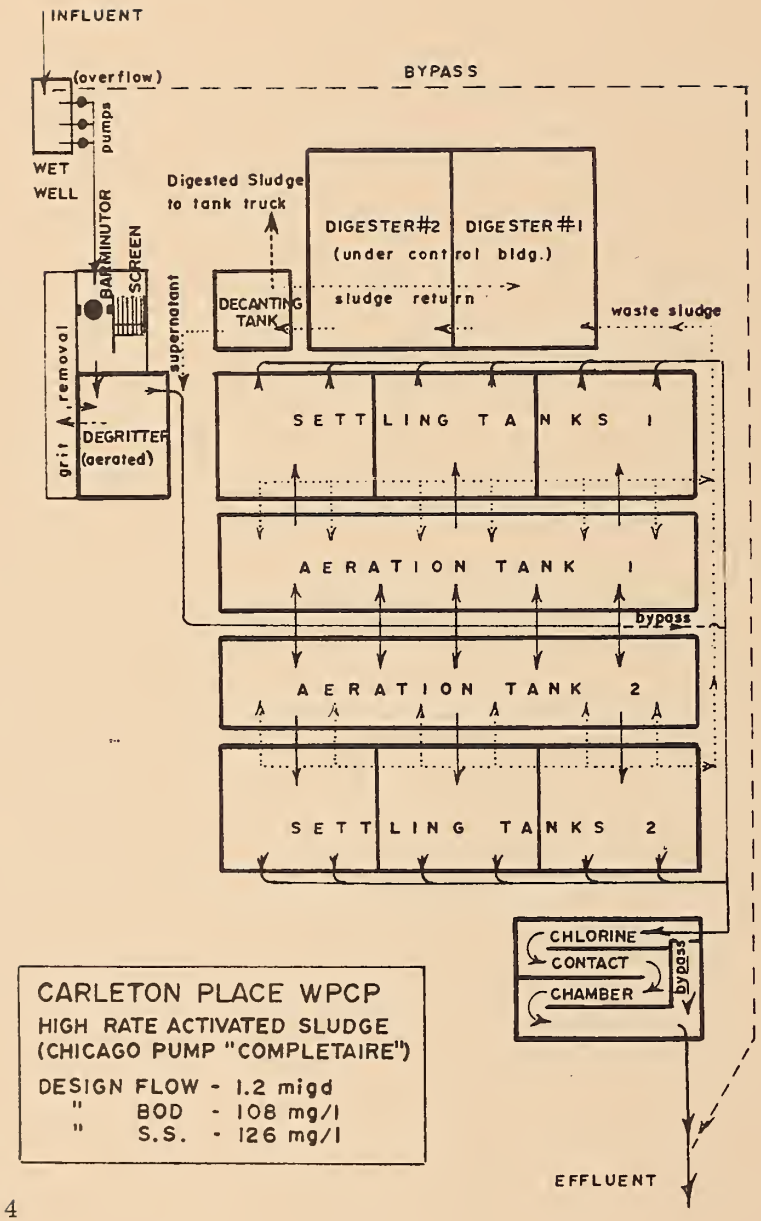


CARLETON PLACE WPCP
HIGH RATE ACTIVATED SLUDGE
(CHICAGO PUMP "COMPLETAIRE")

DESIGN FLOW - 1.2 migd
" BOD - 108 mg/l
" S.S. - 126 mg/l

SEWAGE LIFT PUMPS

Type: Chicago Pump
Cap. Three 1050 IGPM @ 23' TDH

PRETREATMENT

1. Coarse Bar Screen, 2" c-c
2. Barminutor, CP model 15C-12 and bypass screen 1" c-c
3. Grit Removal - C.P. Aer-Degritter - Size 10' x 13' x 7' avg (5700 gal)

AERATION SECTION

- Tank Size: two 76' x 10'-9" x 9'-1" (90,000 gal. total)
- Detention: 1.8 hr @ 1.2 mgd
- Air Supply: Three SUTORBILT 1240 cfm
- Diffusers: C.P. FLEXOFUSERS

SETTLING TANKS

Size: Six 25' x 16' hopper bottom tanks in two sets of three (total volume: 125,000 gal)
Detention: 2.5 hr @ 1.2 mgd
Loading: 500 gpd/sq.ft.

CHLORINATION

Tank Size: 26' x 20' x 6' (20,000 gal)
Detention: 24 minutes @ 1.2 mgd.
Chlorinator: W & T V-800 200 lb/day, flow prop.

AEROBIC DIGESTER

Size: Two 28' x 33'-6" x 12'-8" (160,000 gal total)

DECANTING TANK

Size: 10' x 10' hopper bottom (4300 gal)

'72 Review

GENERAL

This project consists of a 1.2 migd high rate activated sludge sewage treatment plant with aerobic digestion. Raw sewage pumps are associated with the plant.

The plant commenced operation on April 25, 1972 and the operation was assumed by the Ministry on April 28, 1972. It took 18 days to produce an activated sludge.

During the first 8 months of operation, considerable difficulty was experienced in the mechanical operation of the plant. The sludge return and scum removal systems were modified by the supplier. The blower motors and travel lift motors failed on several occasions and were repaired under warranty. At year end the cause of the blower motor failures was under investigation. Extreme difficulty was experienced in maintaining mechanical seals in one of the raw sewage pumps. Four seal installations were required before the supplier rectified the problem.

Process control was complicated by continuous plugging of the diffuser socks in the aeration section. This was caused by a fibrous material becoming wrapped around the socks. The possibility of changing the type of diffuser is under consideration. Due to the design of the plant, there is difficulty in controlling the solids concentration in the aeration tanks. Late in December, freezing of the surface of the final clarifiers occured as the result of low temperatures and near freezing raw sewage.

PLANT FLOWS AND CHLORINATION

The plant treated a total of 362 million gallons of sewage which represents an average flow of 1.5 mgd. The daily flows exceeded the design capacity of the plant 100 percent of the time.

Chlorination of the final effluent is practiced on a year round basis. An average chlorine dosage of 2.8 mg/l was required to obtain a residual of 0.5 mg/l available after a contact period of approximately 30 minutes.

PLANT EFFICIENCY

The average concentration of BOD and suspended solids in the plant influent was 36 mg/l and 50 mg/l respectively. The average concentration of BOD and suspended solids in the plant effluent was 12 mg/l and 15 mg/l respectively which represents a BOD reduction of 67 percent and suspended solids reduction of 70 percent. The low efficiency is a result of the weak influent and high flows.

SLUDGE REMOVAL AND DIGESTION

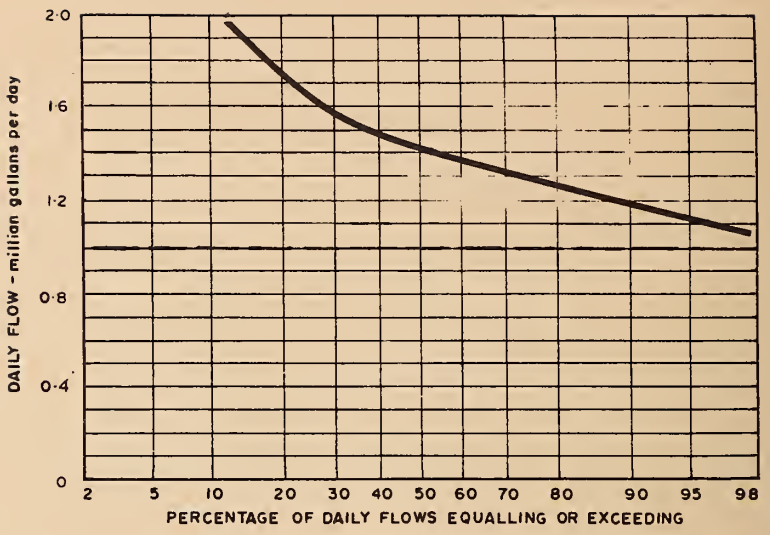
Approximately 339,000 gallons of raw sludge with an average suspended solids concentration of 4900 mg/l was discharged to the digesters and 57,000 gallons of digested sludge with a suspended solids concentration of 8700 mg/l was removed by tank truck.

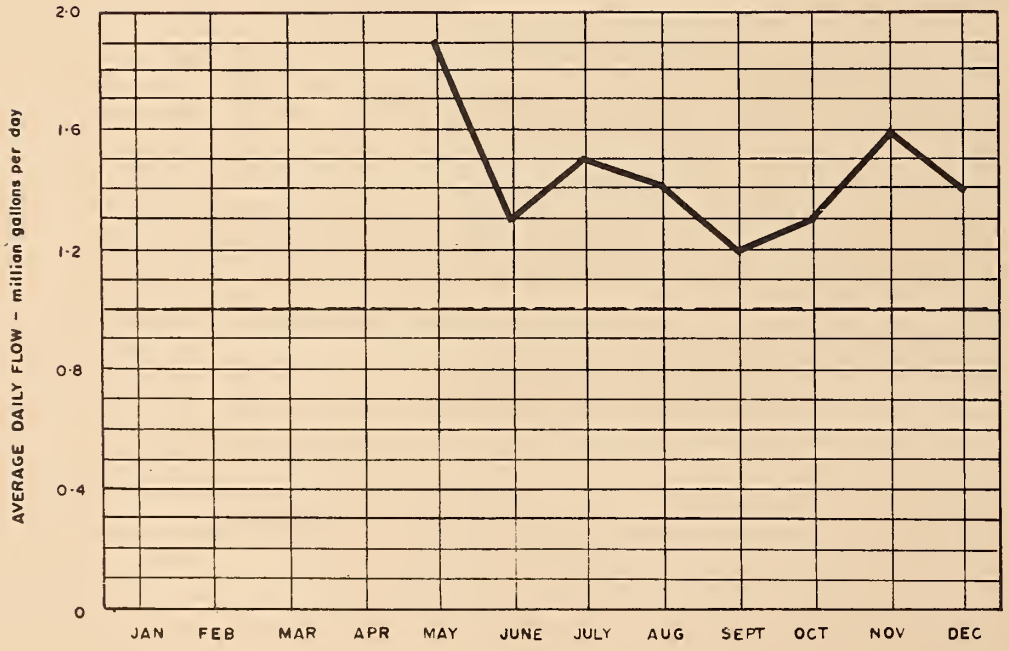
CONCLUSIONS

The plant is hydraulically overloaded and its operation is affected by near freezing sewage in the winter months. This is probably the result of either infiltration or high wastage of water in town as is evidenced by the weak sewage. Every effort should be made to have the Town of Carleton Place locate and repair the cause of the problem.

PROCESS DATA

FLOWS





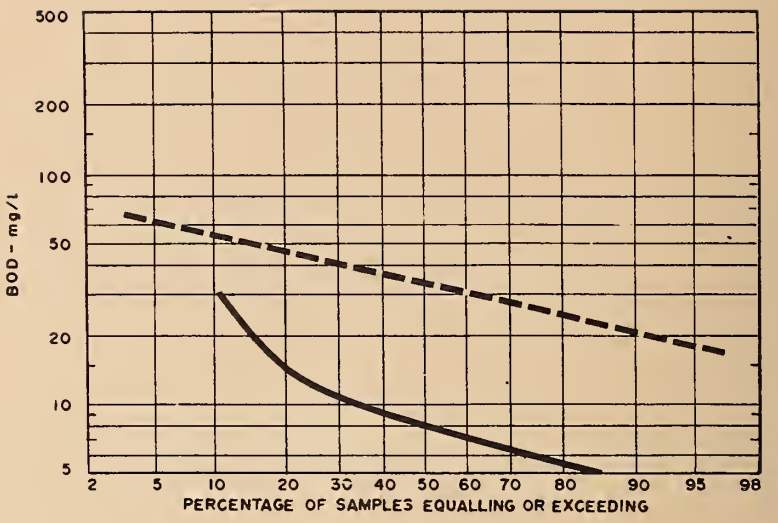
DESIGN CAPACITY _ _ _ _ _ _ _

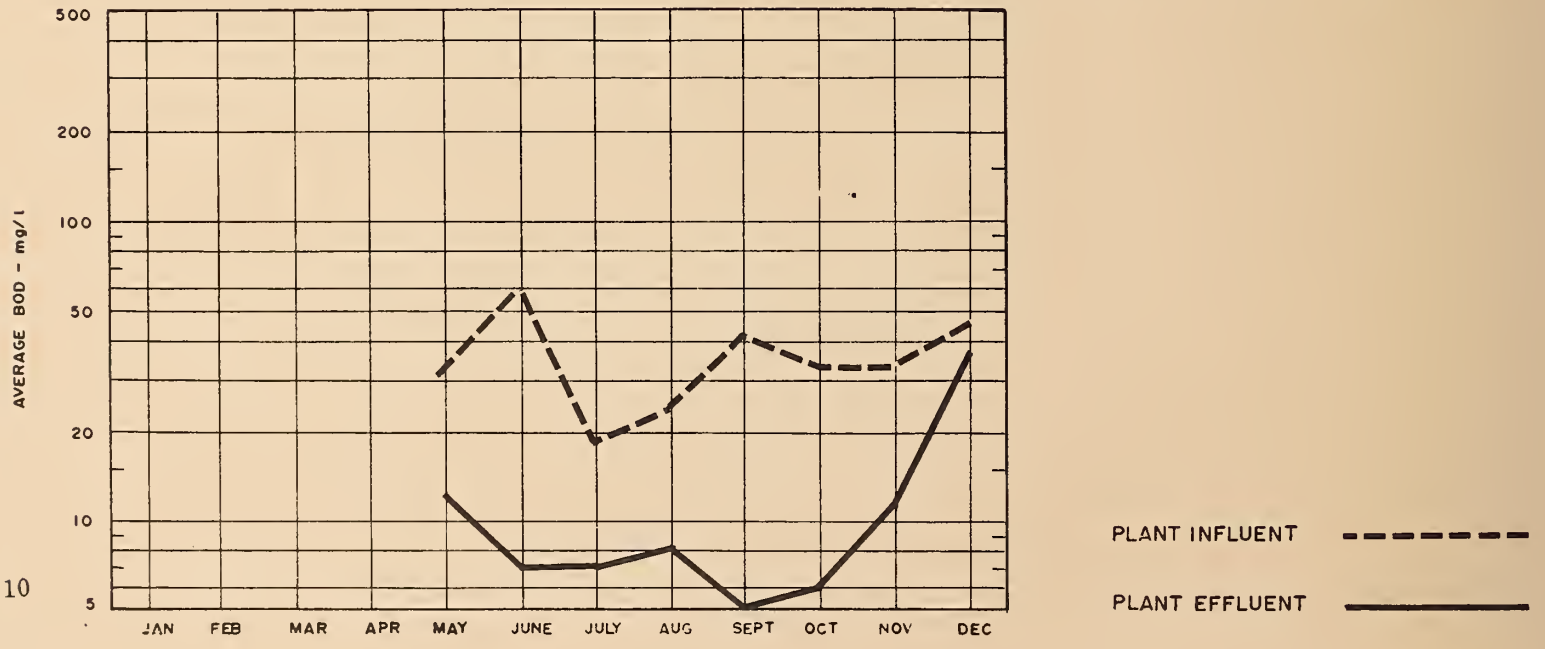
PLANT PERFORMANCE

MONTH	FLOWS			BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				PHOSPHORUS	
	TOTAL FLOW	AVERAGE DAY	MAXIMUM DAY	INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT
	million gallons	mil. gal	mgd	mg/l	mg/l	%	10^3 pounds	mg/l	mg/l	%	10^3 pounds	mg/l P	mg/l P
JAN													
FEB													
MAR													
APR													
MAY	59.5	1.9	2.5	32	12	63	12	60	20	67	24	3.0	2.0
JUNE	39.2	1.3	1.7	60	7	88	21	76	5	93	28	4.0	2.3
JULY	47.4	1.5	2.7	19	7	63	6	39	16	59	11	2.9	1.8
AUG	44.6	1.4	2.2	25	8	68	8	31	8	74	10	2.6	1.8
SEPT	36.5	1.2	1.6	42	5	88	14	71	10	86	22	4.1	2.0
OCT	41.5	1.3	2.0	35	6	83	12	46	7	84	17	15.9	2.6
NOV	49.2	1.6	2.4	36	11	69	12	44	10	77	17	2.8	1.5
DEC	44.6	1.4	2.3	48	37	23	5	48	47	2	0.4	3.3	2.5
TOTAL	362.5 *	-	-	-	-	-		-	-	-		-	-
AVG.		1.5	MAXIMUM 2.7	36	12	67	11	50	15	70	16	6.0	2.1
No. of Samples	-	-	-	14	14	-	-	31	26	-	-	14	14

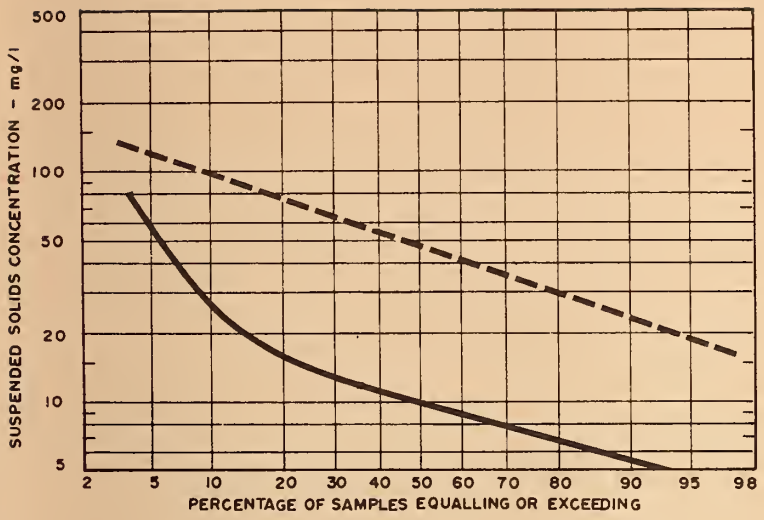
* 246 days flow, started May 1

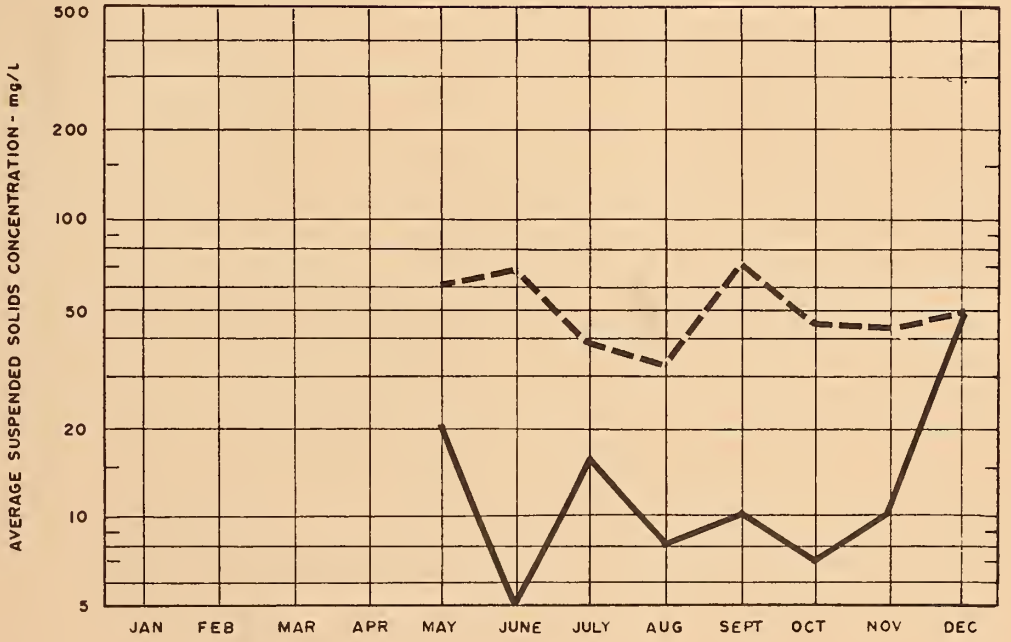
BIOCHEMICAL OXYGEN DEMAND





SUSPENDED SOLIDS

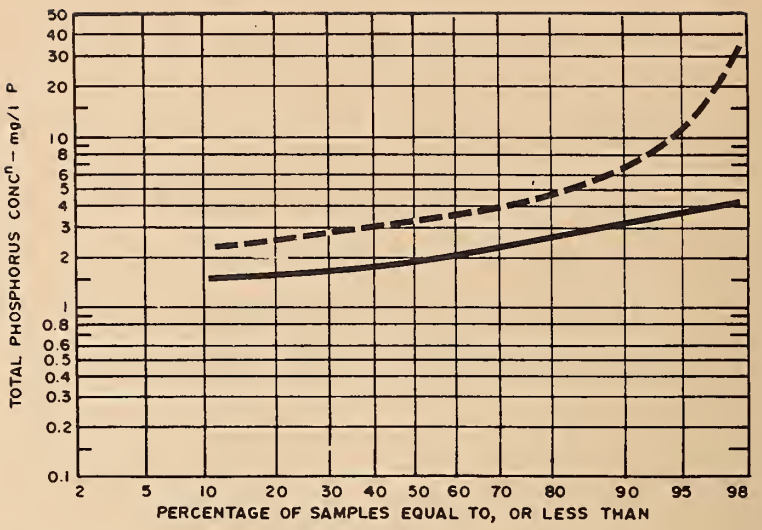


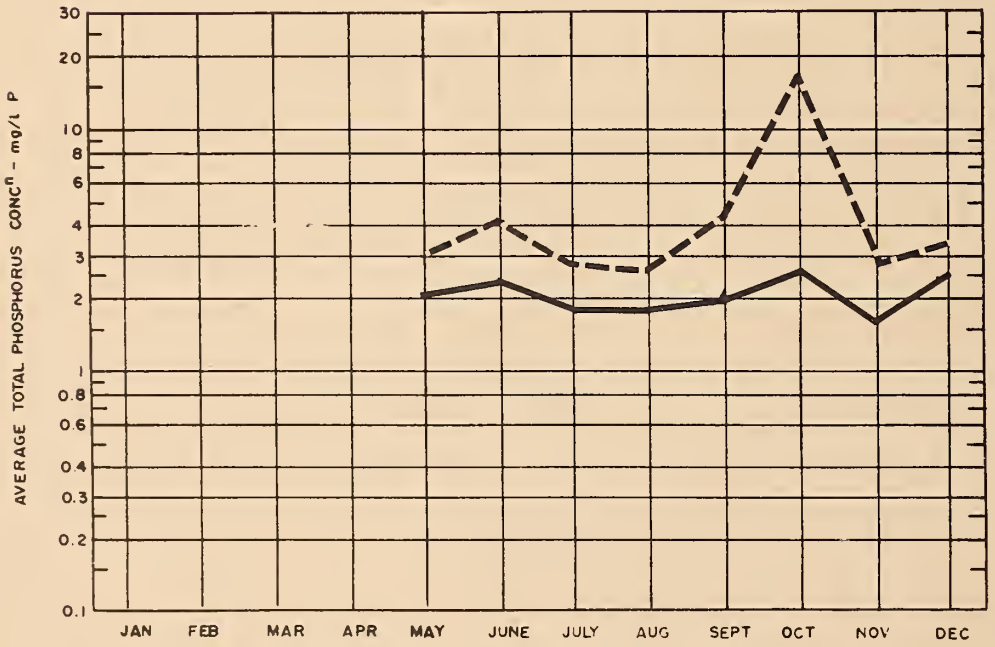


PLANT INFLUENT

PLANT EFFLUENT

PHOSPHORUS



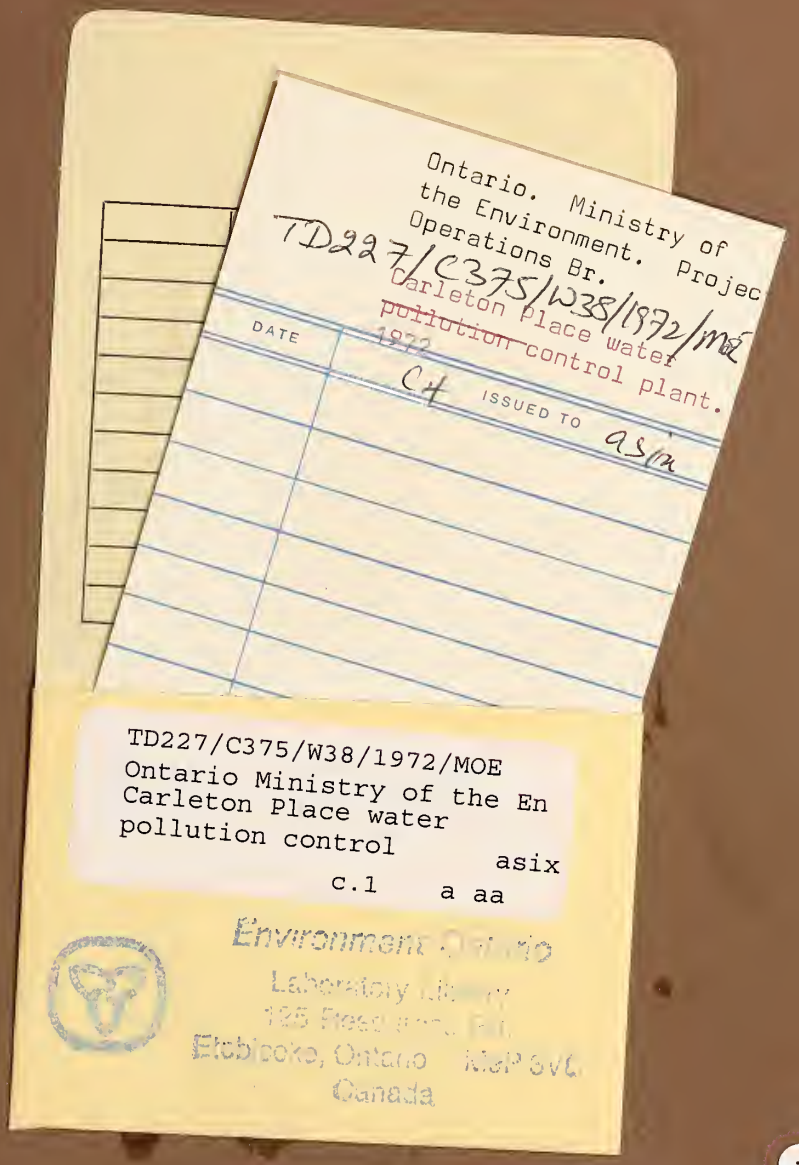


PLANT INFLUENT

PLANT EFFLUENT

TREATMENT DATA

MONTH	GRIT	CHLORINATION		AERATION			WASTE SLUDGE			AEROBIC DIGESTER			
	QUANTITY REMOVED cubic feet	Cl_2 USED 10^3 pounds	AVG. DOSAGE mg/l	MLSS. CONC mg/l	F/M day^{-1}	AIR USED $\frac{1000\ ft^3}{lb\ BOD}$	QUANTITY 10^3 gallons	SUSPENDED SOLIDS mg/l	VOL. SOLIDS %	QUANTITY REMOVED 10 gallons	SUSPENDED SOLIDS mg/l	VOL. SOLIDS %	AMOUNT HAULED cubic yards
JAN													
FEB													
MAR													
APR													
MAY	14	1.2	2.0	2750	.24	1.3	6						
JUNE	2	.8	2.0	2380	.35	0.7	68	5750					
JULY	9	1.6	3.4	2140	.14	2.8	63	3910			8070	29	
AUG	1	1.6	3.6	2190	.17	2.1	76	8440			10150		
SEPT	2	1.2	3.2	2760	.20	1.1	78				15890		
OCT.	1	1.3	3.0	2720	.18	1.3	36	4540		48.0	13410		
NOV		1.4	2.9	2610	.24	1.3	10			9.0	4000		
DEC	4	1.2	2.6	2210	.33	1.3	2				4050		
TOTAL	33	10.3	–	–	–	–	339	–	–	57.0	–	–	
AVG.	.1 cu. ft/mil gal	1.3	2.8	2470	.23	1.5	42	4910		7.1	9260	29	



TD 367 .A56 C374 1972
Carleton Place : water pollution control plant.
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